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IS 11350 (1985): Methods for sampling of medulated raw wool
[TXD 1: Physical Methods of Tests]



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IS : 11350 - 1985

Indian Standard
METHODS FOR
SAMPLING OF MEDULATED RAW WOOL

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NEW DELHI 110002

Indian Standard

METHODS FOR SAMPLING OF MEDULATED RAW WOOL

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Indian Standard

METHODS FOR SAMPLING OF MEDULATED RAW WOOL

0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 29 March 1985, after the draft finalized by the Sampling Methods Sectional Committee had been approved by the Textile Division Council.

0.2 Evaluation of quality of wool is very important for the production of woollen goods. While formulating the standard on methods of test for wool fibres, the Subcommittee for Physical Methods of Test for Wool (TDC 1 : 2) felt the need for formulating objective procedures for drawing a sample of wool fibres.

0.3 The wool available in the country has been classified into two categories, namely, non-medulated wool and wool tops, and medulated and wool tops. The decision to prepare two different standards on sampling of raw wool, that is, raw wool in the form of tops (mainly imported) and medulated raw wool was taken in the light of the decision of Wool and Wool Products Sectional Committee, TDC 4 to prepare the different standards on grading of these two types of wool. While the average fibre diameter is considered for grading of wool tops, in case of medulated raw wool, the grading is based on percentage of wool fibre with diameter below 40 and/or 60 μm or above 80 μm . Accordingly, two different Indian Standards have been published.

0.4 This standard has been prepared after collecting extensive amount of data from a large number of mills and research organizations to assess the inherent variability of the various characteristics for recommending the number of tests to determine the characteristics with specified degree of accuracy.

0.5 In reporting the result of a test or analysis, if the final value, observed or calculated, is to be rounded off, it shall be done in accordance with IS : 2 - 1960*.

*Rules for rounding off numerical values (revised).

1. SCOPE

1.1 This standard prescribes the methods for sampling of medulated raw wool for determining the physical characteristics of wool fibres.

2. TERMINOLOGY

2.0 For the purpose of this standard, the following definitions shall apply.

2.1 Bale — A compressed package of wool in a form convenient for transit.

2.2 Wool Top — Continuous sliver of wool fibres without twist from which the shorter fibres or noils have been removed and the fibres brought parallel to each other by combing.

2.3 Consignment — The quantity of raw wool or wool tops delivered to a buyer against a dispatch note.

2.4 Lot

2.4.1 Lot of Raw Wool — All the bales of raw wool of the same grade in a consignment.

2.4.2 Lot of Wool Tops — The quantity of wool tops in a consignment of the same grade and quality.

2.5 Limit of Error of Estimate — The maximum difference between the estimate (to be made on the basis of sample) and its true values (that would be obtained if all the units in lot were tested) at a given probability level.

3. SAMPLING OF RAW WOOL FROM BALES

3.1 In order to obtain a representative sample from a lot of bales, it is necessary to distribute the sample to be selected over the bales in the lot and different zones in the bales.

3.1.1 Unless otherwise agreed to between the buyer and the seller, the number of bales to be selected at random from a lot shall be in accordance with Table 1. To ensure randomness of selection of bales, procedures given in IS : 4905 - 1968* shall be followed.

3.2 From each of the bales so selected, the representative material shall be drawn in accordance with 3.2.1.

3.2.1 The bale shall be hypothetically divided in three layers. A lump weighing about 500 g shall be selected from four places in each

*Methods for random sampling.

TABLE 1 NUMBER OF BALES TO BE SELECTED FROM A LOT
(Clause 3.1.1)

| NUMBER OF BALES IN A LOT | | | NUMBER OF BALES TO BE SELECTED |
|-----------------------------|-----|-------|-----------------------------------|
| Up | to | 25 | 2 |
| 26 | „ | 50 | 3 |
| 51 | „ | 150 | 5 |
| 151 | „ | 300 | 8 |
| 301 | and | above | 13 |

layer. The wool thus drawn shall be thoroughly mixed. The laboratory sample shall be prepared by following the method in 3.2.2.

3.2.2 Spread and divide the mass of the samples into roughly 40 zones and take a handful of fibres from each zone. Divide each handful into two (taking care to avoid breaking of the fibres) and reject one-half, choosing the half to be rejected at random. If the fibres are parallel, make the division longitudinally into two parts, that is, in a direction which avoids selection of fibres by their ends. Divide the retained half into two and again reject half at random. Repeat the procedure till a laboratory sample of adequate weight is obtained.

3.3 The methods for drawing the test specimen for determining each of the above mentioned characteristics from the laboratory sample shall be according to the relevant standard on the methods of test.

4. SAMPLING OF WOOL TOPS

4.1 The number of bales or cases of tops to be selected at random shall be in accordance with Table 1 and 3.1.1.

4.1.1 Five tops shall be selected at random from each of the bales or cases selected according to 4.1.

4.2 A length of about 5 m of the top shall be removed from each selected top after discarding the end portion.

4.2.1 A laboratory sample of adequate mass shall be obtained by the procedure given in 3.2.2.

5. NUMBER OF TEST SPECIMENS

5.1 The number of test specimens to be drawn for determination of various characteristics of fibres in a lot shall depend upon the accuracy with which the characteristics are to be determined.

5.1.1 Table 2 gives the number of fibres to be drawn for wool fibre diameter by projection microscope method according to the accuracy with which the extreme percentage of the specified fibre distribution is to be determined.

5.1.2 Table 3 gives the number of fibres to be drawn for the characteristic fibre length according to accuracy of its determination.

TABLE 2 NUMBER OF FIBRES FOR TESTING FIBRE DIAMETER

(Clause 5.1.1)

| SPECIFIED FIBRE, PERCENT | LIMIT OF ERROR OF ESTIMATE | | | | | |
|-----------------------------|----------------------------|-------|-------|-------|-------|-------|
| | 0.3 | 0.5 | 0.8 | 1.0 | 1.5 | 2.0 |
| 1 | 4 200 | 1 500 | 600 | — | — | — |
| 3 | — | 4 500 | 1 800 | 1 200 | — | — |
| 5 | — | 7 300 | 2 900 | 1 800 | 800 | — |
| 10 | — | — | 5 400 | 3 500 | 1 500 | 900 |
| 15 | — | — | — | 4 900 | 2 200 | 1 300 |

TABLE 3 NUMBER OF TESTS

(Clause 5.1.2)

| CHARACTERISTIC | LIMIT OF ERROR OF MEAN, PERCENT | | | | |
|----------------|---------------------------------|-----|-----|----|----|
| | 3 | 4 | 5 | 7 | 10 |
| Fibre length | 270 | 150 | 100 | 50 | 25 |

5.2 Unless otherwise agreed to between the buyer and the seller, approximately 2 000 fibres for fibre diameter (projection microscope method), and 100 for fibre length shall be made for all routine testing.

5.2.1 The number of tests for the characteristics, namely, wool fibre diameter by air flow method, wool fibre content of raw wool, kemp content of raw wool and moisture in wool shall be three if the lot size is less than 100 bales or 1 000 tops and five otherwise.

5.2.2 The number of test for crimp in wool shall be the same as that for fibre length.

6. REPORT

6.1 The procedure for reporting the test results shall be according to the relevant standards on the methods of test.

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INTERNATIONAL SYSTEM OF UNITS (SI UNITS)

Base Units

| QUANTITY | UNIT | SYMBOL |
|---------------------------|----------|--------|
| Length | metre | m |
| Mass | kilogram | kg |
| Time | second | s |
| Electric current | ampere | A |
| Thermodynamic temperature | kelvin | K |
| Luminous intensity | candela | cd |
| Amount of substance | mole | mol |

Supplementary Units

| QUANTITY | UNIT | SYMBOL |
|-------------|-----------|--------|
| Plane angle | radian | rad |
| Solid angle | steradian | sr |

Derived Units

| QUANTITY | UNIT | SYMBOL | DEFINITION |
|----------------------|---------|--------|---------------------------------|
| Force | newton | N | 1 N = 1 kg.m/s ² |
| Energy | joule | J | 1 J = 1 N.m |
| Power | watt | W | 1 W = 1 J/s |
| Flux | weber | Wb | 1 Wb = 1 V.s |
| Flux density | tesla | T | 1 T = 1 Wb/m ² |
| Frequency | hertz | Hz | 1 Hz = 1 c/s (s ⁻¹) |
| Electric conductance | siemens | S | 1 S = 1 A/V |
| Electromotive force | volt | V | 1 V = 1 W/A |
| Pressure, stress | pascal | Pa | 1 Pa = 1 N/m ² |